Title 13. CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER TECHNICAL STATUS AND PROPOSED REVISIONS TO MALFUNCTION AND DIAGNOSTIC SYSTEM REQUIREMENTS AND ASSOCIATED ENFORCEMENT PROVISIONS FOR 2004 AND SUBSEQUENT MODEL YEAR PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES AND ENGINES (OBD II)

The Air Resources Board (the "Board" or "ARB") will conduct a public hearing at the time and place noted below to review the technical status and implementation of California's OBD II requirements. The Board will consider amendments to the OBD II regulation to update the regulation to account for newer emission control technologies and lower tailpipe standards, to increase the amount of standardized data available to repair technicians and Inspection and Maintenance (I/M) inspectors, to clarify the regulation where necessary, to adopt more specific enforcement provisions, and to improve the effectiveness of the regulation for future model year vehicles.

DATE: April 25, 2002

TIME: 9:00 a.m.

PLACE: California Environmental Protection Agency
Air Resources Board
1001 "I" Street
Auditorium, Second Floor
Sacramento, Ca 95814

This item will be considered at a two-day meeting of the Board, which will commence at 9:00 a.m., April 25, 2002, and may continue at 8:30 a.m., April 26, 2002. This item might not be considered until April 26, 2002. Please consult the agenda for the meeting, which will be available at least ten days before April 25, 2002, to determine the day on which this item will be considered.

This facility is accessible to persons with disabilities. If accommodation is needed, please contact the Clerk of the Board at (916) 322-5594, or TDD (916) 324-9531 or (800) 700-8326 for TDD calls from outside the Sacramento area by April 1, 2002, to ensure accommodation.

INFORMATIVE DIGEST OF PROPOSED ACTION AND POLICY STATEMENT OVERVIEW

Sections Affected: Proposed adoption of title 13, California Code of Regulations (CCR) section 1968.2 to supersede the general OBD II requirements as set forth in title 13, CCR section 1968.1 for 2004 and subsequent model year passenger cars, light-duty trucks, and medium-duty vehicles and engines; and proposed adoption of title 13, CCR

section 1968.5 to supersede the general enforcement procedures as set forth in title 13, CCR sections 2100-2149, as they apply to OBD II-related enforcement, and section 1968.1(i) for 2004 and subsequent model year model year passenger cars, light-duty trucks, and medium-duty vehicles and engines.

Documents Incorporated by Reference:

International Standards Organization[1] (ISO) 9141-2, "Road vehicles – Diagnostic Systems – CARB Requirements for Interchange of Digital Information," February, 1994.

ISO 14230-4, "Road vehicles – Diagnostic systems – KWP 2000 requirements for Emission-related systems," June, 2000.

ISO 15765-4, "Road Vehicles – Diagnostics on Controller Area Network (CAN) – Part 4: Requirements for emission-related systems," December, 2001.

ISO 15031-5, "Road Vehicles – Communication between vehicle and external test equipment for emission-related diagnostics – Part 5: Emission-related diagnostic services," December, 2001.

Society of Automotive Engineers[2] (SAE) Recommended Practice J1850, "Class B Data Communication Network Interface," May, 2001.

SAE Recommended Practice J1930, "Electrical/Electronic Systems Diagnostic Terms, Definitions, Abbreviations, and Acronyms," May, 1998.

SAE Recommended Practice J1962, "Diagnostic Connector," February, 1998.

SAE Recommended Practice J1978, "OBD II Scan Tool," February, 1998.

SAE Recommended Practice J1979, "E/E Diagnostic Test Modes," September, 1997.

SAE Recommended Practice J2012, "Recommended Practice for Diagnostic Trouble Code Definitions," March, 1999.

Speed Versus Time Data for California's Unified Driving Cycle, December 12, 1996.

Air Resources Board (ARB) Manufacturers Advisory Correspondence (MAC) No. 99-06, "Certification of Direct Ozone Reduction Technologies," December 20, 1999.

[1] Copies of ISO documents are available through ISO by mail at Copyright Manager, ISO Central Secretariat, 1 rue de Varembe, 1211 Geneva 20 Switzerland; by phone at +41 22 749 0111; by fax at +41 22 734 1079; or by e-mail at iso@iso.ch.

[2] Copies of SAE documents are available through SAE by mail at SAE Customer Sales and Support, 400 Commonwealth Drive, Warrendale, PA 15096-0001, U.S.A.; by phone at 724-776-4970; by fax at 724-776-0790; by e-mail at publications@sae.org; or by website at http://www.sae.org.

ARB Mail-0ut #95-20, “Guidelines for Compliance with On-Board Diagnostics II (OBD II) Requirements”, May 22, 1995.

Background: Section 1968.1 was originally adopted by the Board on September 12, 1989, requiring manufacturers to implement second generation on-board diagnostic systems on new motor vehicles. The regulation was first implemented beginning with the 1994 model year, and requires that essentially all new 1996 and later model year passenger cars, light-duty trucks, and medium-duty vehicles and engines be equipped with OBD II systems. The section specifically requires monitoring of engine misfire, catalysts, oxygen sensors, evaporative systems, exhaust gas recirculation (EGR), secondary air systems, fuel systems, and all electronic powertrain components that can affect emissions when malfunctioning. The regulations also require OBD II systems to provide specific diagnostic information in a standardized format through a standardized serial data link on-board the vehicles.

In 1989, when initially adopting section 1968.1, the Board directed the staff to provide an update within two years on the progress of manufacturers in designing and implementing monitoring systems to meet the OBD II requirements. It further directed the staff to propose any modifications to the regulations that were deemed necessary based on industry progress to date. On September 12, 1991, the staff reported to the Board and proposed a number of modifications to address manufacturers’ implementation concerns, to clarify misunderstood regulatory language, and to enhance the effectiveness of the requirements in some areas. The Board considered further amendments to the OBD II regulations on July 9, 1993, in response to a Petition from Ford Motor Company. At the Hearing, the Board adopted amendments to provide limited compliance relief to manufacturers that attempt in good faith to meet the requirements in full but are unable to certify a fully compliant system.

Another update on manufacturers’ progress towards meeting the OBD II requirements was held on December 8, 1994. Again, the Board adopted modifications to the regulations to address manufacturers’ implementation concerns, strengthen specific monitoring requirements, and clarify regulatory language. The Board last adopted amendments to the regulations on December 12, 1996, to improve and clarify the monitoring requirements where needed, to add new monitoring requirements, to improve the availability of service information, and to address some issues associated with the implementation of OBD II into Inspection and Maintenance (I/M) programs. By this time, manufacturers and ARB staff had gained considerable experience with OBD II systems, which had, in the great majority of instances, been working reliably in-use to detect emission-related malfunctions.

In addition, at the time that the OBD II regulation was initially adopted, the ARB envisioned that the regulation would be enforced under the general enforcement procedures set forth in title 13, CCR sections 2100-2149, with reference to the provisions of section 1968.1(i). Manufacturers have been on notice since the initial adoption of the OBD requirements that the ARB staff would enforce OBD II regulation

after its effective date, and that appropriate remedies, including recall, would be ordered for noncompliance.

Staff Proposal: Since the Board last adopted amendments to the regulation in 1996, staff and manufacturers have identified areas in which modifications to section 1968.1 would provide for improved monitoring system performance. Thus, the staff is proposing the adoption of section 1968.2 to supersede section 1968.1 for 2004 and subsequent model year model year passenger cars, light-duty trucks, and medium-duty vehicles and engines. While most of the monitoring requirements in section 1968.1 are being carried over into section 1968.2, the proposed regulation reflects substantial editing and reorganization to provide improved clarity. The proposed regulation also includes new requirements that apply explicitly to 2004 and subsequent model year vehicles as well as reflects the increased use of certain new or existing emission control technologies. These proposed requirements would further increase the effectiveness of OBD II systems in detecting emission-related malfunctions. Among the provisions being proposed are:

- Catalyst system monitoring of oxides of nitrogen (NOx) conversion efficiency in addition to the current requirement for hydrocarbon (HC) conversion efficiency (section 1968.2(e)(1)).
- Revisions to the misfire monitoring requirements to clarify when manufacturers are allowed to disable misfire monitoring (section 1968.2(e)(3)).
- Revisions to the evaporative system monitoring requirements to allow greater flexibility for manufacturers in detecting larger sized leaks (section 1968.2)(e)(4)).
- Revisions to require secondary air system monitoring for proper airflow during vehicle warm-up (section 1968.2(e)(5)).
- Continuous monitoring for oxygen sensor circuit faults (section 1968.2(e)(7)).
- Increased frequency of rationality monitoring for input comprehensive components (section (e)(16)).
- Expansion of monitoring requirements to include emission sources, such as fuel-fired passenger compartment heaters and on-board reformers (section (e)(17)).
- Specific monitoring requirements for Variable Valve Timing (VVT) systems (section 1968.2(e)(13)), cold start emission reduction strategies (section 1968.2(e)(11)), air conditioning system components (section (e)(12)), and direct ozone reduction systems (section 1968.2(e)(14)).
- New monitoring requirements for diesel vehicles to address emissions resulting from catalyst system malfunctions (section 1968.2(e)(1.5)) and particulate matter trap malfunctions (section 1968.2(e)(15)).
- Allowance for SULEV applications to use a malfunction criterion of 2.5 times, instead of 1.5 times, the applicable FTP standards wherever the latter criterion is required in section 1968.2(e) (section 1968.2(e)(18)).
- A standardized methodology for determining the frequency of monitor operation during in-use driving and a minimum operating frequency for most non-continuous monitors (section 1968.2(d)(3.2)).

- Requirements to improve the availability of diagnostic information to repair technicians to assist them in effectively diagnosing and repairing vehicles (section 1968.2(f)).
- Modifications to existing standardization requirements to assist the implementation of OBD II into the I/M program (section 1968.2)(f)).
- New requirements for post-assembly line testing of production vehicles to verify compliance with the requirements of section 1968.2 (section 1968.2(j)).
- Other minor clarifications to improve the regulation.

Finally, after more than eight years of experience in implementing and enforcing OBD II requirements, the staff is proposing the adoption of section 1968.5, which details in-use enforcement provisions that apply specifically to OBD II systems that conform to the proposed OBD II regulation, section 1968.2. More specifically, section 1968.5 would supersede the general enforcement procedures as set forth in title 13, CCR sections 2100-2149, as they apply to OBD II-related enforcement, and section 1968.1(i) for 2004 and subsequent model year passenger cars, light-duty trucks, and medium-duty vehicles and engines. The proposed enforcement provisions would better address and identify the special circumstances involved in in-use testing and the issuing and implementing of remedial orders to correct any identified deficiencies that are unique to OBD II systems.

To address these objectives, the staff is proposing detailed procedures for in-use enforcement testing of OBD II systems installed on 2004 and subsequent model year vehicles. In addition, the proposal sets forth procedures that would be followed by the ARB if, after such testing, OBD II systems of a tested vehicle group were found to be nonconforming. Among other things, the procedures would authorize the ARB to take remedial action, which may include recall of vehicles in which the nonconforming systems are installed and assessment of monetary penalties against the affected manufacturer. Finally, staff is proposing a specific protocol to be followed by the Executive Officer and affected manufacturers in implementing remedial action plans.

Comparable Federal Regulations: In February 1993, the United States Environmental Protection Agency (U.S. EPA) promulgated final on-board diagnostic requirements for federally certified vehicles. (40 CFR Part 86, sections 86.094-2, 86.094-17, 86.094-18(a), 86.094-21(h), 86.094-25(d), 86.094-30(f), 86.094-35(I), 86.095-30(f), 86.095-35(I); see 58 Fed.Reg. 9468-9488 (February 19, 1993).) The requirements were last modified with a final rule published on December 22, 1998 (63 Fed.Reg. 70681-70697). A central part of the federal regulation is that, for purposes of federal certification of vehicles, the U.S. EPA will deem California-certified OBD II systems to comply with the federal regulations.

On October 3, 1996, the U.S. EPA formally granted California's request for a waiver regarding the OBD II regulation, as last amended in December 1994,[3] recognizing that the OBD II regulation is at least as stringent in protecting public health and welfare as

[3] *California State Motor Vehicle Pollution Control Standards; Waiver of Federal Preemption; Decision,* dated October 3, 1996, 61 Fed.Reg. 53371-53372.

the federal regulation, and that unique circumstances exist in California necessitating the need for the state's own motor vehicle regulations program.

The federal OBD requirements are comparable in concept and purpose with California's OBD II regulation; however, differences exist with respect to the scope and stringency of the requirements of the two regulations. More specifically, California's current OBD II regulations are generally more stringent than the comparable federal requirements. Under OBD II requirements, manufacturers must implement monitoring strategies for essentially all emission control systems and emission-related components, as mentioned in the above summary. Generally, the OBD II regulation requires that components be monitored to indicate malfunctions when component deterioration or failure causes emissions to exceed 1.5 times the applicable tailpipe emission standards of the certified vehicle. However, the regulation also requires that components be monitored for functional performance if the failure of such components does not cause emissions to exceed the 1.5 times the standards threshold.

The federal requirements, in contrast, require monitoring of the catalyst, engine misfire, evaporative emission control system, and oxygen sensors. Other emission control systems or components, such as EGR and secondary air systems, need only be monitored if by malfunctioning, vehicle emissions exceed 1.5 times the applicable tailpipe standards. This also applies to after-treatment devices on diesel applications, such as catalyst systems and particulate matter traps.

With the proposed adoption of section 1968.2, ARB staff is proposing that OBD II be applied to the next generation of low emission vehicles, and thus, in general, would be going even further in making the OBD II regulations more stringent relative to federal requirements. For example, the proposed OBD II regulations would require catalyst system monitoring of NOx conversion efficiency, which federal regulations do not require.

COSTS TO PUBLIC AGENCIES AND TO BUSINESSES AND PERSONS AFFECTED

The determinations of the Executive Officer concerning the costs or savings necessarily incurred in reasonable compliance with the proposed regulations are presented below.

Pursuant to Government Code section 11346.5(a)(5), the Executive Officer has determined that the proposed regulations will not impose a mandate on local agencies or school districts. The Executive Officer has further determined pursuant to Government Code section 11346.5(a)(6) that the proposed regulations will result in some additional costs to the Air Resources Board but not to other state agencies. In addition, the Executive Officer has also determined pursuant to Government Code section 11346.5(a)(6) that the proposed regulatory action will not create a cost to any local agency or school district that is required to be reimbursed under Part 7 (commencing with section 17500) of Division 4 of the Government Code or other nondiscretionary costs or savings imposed on local agencies. The Executive Officer

further determined that the proposed regulations will not result in costs or savings in federal funding to the state.

In developing this regulatory proposal, the ARB staff evaluated the potential economic impacts on certain private persons and businesses. The Executive Officer has made an initial determination that the adoption of this regulation may have a significant adverse economic impact on businesses, including the ability of California businesses to compete with business in other states. The Executive Officer has considered proposed alternatives that would lessen any adverse economic impact on business and invites you to submit proposals. Submissions may include the following considerations:

(i) The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to businesses.
(ii) Consolidation or simplification of compliance and reporting requirements for businesses.
(iii) The use of performance standards rather than prescriptive standards.
(iv) Exemption or partial exemption from the regulatory requirements for businesses.

The businesses to which the proposed requirements are primarily addressed and for which compliance would be required are manufacturers of California motor vehicles. There are presently 34 domestic and foreign corporations that manufacture California-certified passenger cars, light-duty trucks, and medium-duty gasoline and diesel fueled vehicles that are equipped with OBD II systems. Only one motor vehicle manufacturing plant (NUMMI) is located in California.

For motor vehicle manufacturers to comply with the proposed regulatory action, the costs are expected to be negligible. The proposed revisions consist primarily of modifications to existing computer software and additional verification testing. Since manufacturers would be provided sufficient leadtime to incorporate the proposed changes when redesigning vehicles to comply with the Low Emission Vehicle II (LEV II) program requirements, incorporation and verification of the revised OBD II software would be accomplished during the regular design process at no additional cost. As a result, costs to manufacturers, and therefore consumers, is anticipated to remain virtually unchanged. Similarly, because manufacturers are fully expected, and required, to comply with the regulations, enforcement costs to manufacturers should also be negligible.

Also affected would be businesses licensed by the Bureau of Automotive Repair as I/M facilities that perform in-use smog check tests using OBD II systems. The proposed regulatory action is expected to result in some increased costs to licensed I/M service stations. The proposed regulatory action would allow for the implementation of a new OBD II communication protocol called CAN (Controller Area Network) on vehicles, which provides more reliable, rapid and less expensive communication between the various electronic systems on vehicles. To accommodate CAN, however, each I/M station would need to upgrade existing equipment at a one-time cost of about $500.

The total cost would be approximately $5 million for all of the 10,000 I/M stations in California. Use of the CAN protocol would enhance information available to repair technicians, thereby leading to improved and less expensive repairs which would generate savings for consumers.

Consistent with this, in developing this regulatory proposal, the ARB staff has found that the proposed regulation will pose no adverse economic impact on private persons and businesses as consumers. The Executive Officer has determined that there will be no, or negligible, potential cost impact on representative private persons or businesses as a result of the proposed regulatory action. The proposed requirements are not expected to increase the rate or the cost of vehicle repairs, so no cost impact on consumers is expected. The proposed requirements would provide improved OBD II information and encourage manufacturers to build more durable vehicles, which may result in savings for consumers.

As set forth above with respect to the additional cost to I/M facilities, the Executive Officer has determined that the proposed requirements will affect small businesses.

In accordance with Government Code section 11346.3, the Executive Officer has determined that the proposed regulatory action should have minor or no impact on the creation or elimination of jobs within the State of California, the creation of new businesses or elimination of existing businesses within California, or the expansion of businesses currently doing business within California.

The proposed regulatory action would continue to require motor vehicle manufacturers to file written reports as is presently required in title 13, CCR section 1968.1. Although the proposed regulation would add several new reporting requirements not present in section 1968.1, such as the requirement to verify production vehicle performance, the requirements should have a negligible impact on vehicle costs. Moreover, the proposed regulation provides motor vehicle manufacturers with greater flexibility in filing certification documents, which should result in savings to the manufacturers. The Executive Officer has determined, pursuant to Government Code section 11346.3(c) and 11346.5(a)(11), that the reporting requirements that apply to the motor vehicle manufacturers are necessary for the health, safety, or welfare of the people of the state. A detailed assessment of the economic impacts of the proposed regulatory action can be found in the Staff Report.

Before taking final action on the proposed regulatory action, the Board must determine that no reasonable alternative considered by the agency or that has been otherwise identified and brought to the attention of the agency would be more effective in carrying out the purpose for which the action is proposed, or would be as effective and less burdensome to affected private persons than the proposed action.

AVAILABILITY OF DOCUMENTS AND AGENCY CONTACT PERSONS

The ARB staff has prepared a Staff Report: Initial Statement of Reasons (ISOR) for the proposed regulatory action that includes a summary of the environmental and economic impacts of the proposal, and supporting technical documentation.

Copies of the ISOR and the full text of the proposed regulatory language may be obtained from the ARB's Public Information Office, Environmental Services Center, 1001 "I" Street, First Floor, Sacramento, CA 95814, (916) 322-2990 at least 45 days prior to the scheduled hearing (April 25, 2002).

Upon its completion, the Final Statement of Reasons (FSOR) will be available and copies may be requested from the agency contact persons in this notice, or may be accessed on the web site listed below.

Inquiries concerning the substance of the proposed regulation should be directed to the agency contact persons for this rulemaking: Mike Regenfuss, Staff Air Pollution Specialist, at (626) 575-7004 or e-mail (mregenfu@arb.ca.gov), or Mike McCarthy, Manager, Advanced Engineering Section, Mobile Source Control Division, at (626) 575-6615 or e-mail (mmccarth@arb.ca.gov).

Further, the agency representative and designated back-up contact persons to whom non-substantive inquiries concerning the proposed administrative action may be directed are Artavia Edwards, Manager, Board Administration & Regulatory Coordination Unit, (916) 322-6070, or Marie Kavan, Regulations Coordinator, (916) 322-6533. The Board has compiled a record for this rulemaking action, which includes all the information upon which the proposal is based. This material is available for inspection upon request to the agency contact persons.

If you are a person with a disability and desire to obtain this document in an alternative format, please contact the Air Resources Board's ADA Coordinator at (916) 323-4916, or TDD (916) 324-9531, or (800) 700-8326 for TDD calls from outside the Sacramento area.

This notice, the ISOR, and subsequent regulatory documents, including the FSOR once it has been prepared pursuant to Government Code section 11346.9(a), will also be available on the ARB internet site for this rulemaking at: http://www.arb.ca.gov/regact/obd02/obd02.htm.

SUBMITTAL OF COMMENTS

The public may present comments relating to this matter orally or in writing at the hearing, and in writing or by e-mail before the hearing. To be considered by the Board, written submissions must be received by no later than 12:00 noon, April 24, 2002 and addressed to the following:

Postal Mail is to be sent to:

Clerk of the Board
Air Resources Board
1001 "I" Street, 23rd Floor
Sacramento, California 95814

Electronic mail is to be sent to: obdii@listserv.arb.ca.gov and received at the ARB no later than 12:00 noon, April 24, 2002.

Facsimile submissions are to be transmitted to the Clerk of the Board at (916) 322-3928 and received at the ARB no later than 12:00 noon, April 24, 2002.

The Board requests, but does not require, that 30 copies of any written submission and that all written statements be filed at least 10 days prior to the hearing so that ARB staff and Board Members have time to fully consider each comment. The ARB encourages members of the public to bring to the attention of the staff in advance of the hearing any suggestions for modification of the proposed regulatory action.

STATUTORY AUTHORITY AND REFERENCES

This regulatory action is proposed under that authority granted in sections 39600, 39601, 43000.5, 43013, 43016, 43018, 43100, 43101, 43104, 43105, 43105.5, 43106, 43154, 43211, and 43212 of the Health and Safety Code. This action is proposed to implement, interpret and make specific sections 39002, 39003, 39010-39060, 39515, 39600-39601, 43000, 43000.5, 43004, 43006, 43013, 43016, 43018, 43100, 43101, 43102, 43104, 43105, 43105.5, 43106, 43150-43156, 43204, 43211, and 43212 of the Health and Safety Code.

HEARING PROCEDURES AND AVAILIBILITY OF MODIFIED TEXT

The public hearing will be conducted in accordance with the California Administrative Procedure Act, Title 2, Division 3, Part 1, Chapter 3.5 (commencing with section 11340) of the Government Code.

Following the public hearing, the Board may adopt the regulatory language as originally proposed, or with nonsubstantial or grammatical modifications. The Board may also adopt the proposed regulatory language with other modifications if the text as modified is sufficiently related to the originally proposed text that the public was adequately placed on notice that the regulatory language as modified could result from the

proposed regulatory action; in such event the full regulatory text, with the modifications clearly indicated, will be made available to the public, for written comment, at least 15 days before it is adopted. The public may request a copy of the modified regulatory text from the Board's Public Information Office, 1001 "I" Street, Sacramento, CA 95814, (916) 322-2990.

CALIFORNIA AIR RESOURCES BOARD

/s/
Michael P. Kenny
Executive Officer

Date: February 26, 2001

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs see our Web –site at www.arb.ca.gov.